

REMARKS

Reconsideration of this application is hereby respectfully requested.

A Petition For Extension Of Time Under 37 CFR 1.136(a) for an extension of time of one (1) month in the shortened statutory period set for response to the Office Action dated January 10, 2007 is being filed herewith in the above-identified application thereby extending said period for response from April 10, 2007 to May 10, 2007, whereby this Amendment will be considered to be timely filed.

By this Amendment, Section Headings are being inserted where required in the text of the Specification of the above-identified application.

Also, by this Amendment, Claims 1 to 35, inclusive, which are presently pending in the above-identified application, are being cancelled and new Claims 36 to 58, inclusive, are being substituted therefor. This action is being taken in an effort to more particularly point out and distinctly claim Applicant's invention. In addition, this lesser number of claims is deemed to be sufficient to adequately protect Applicant's invention to which the above-identified application is directed.

The present invention is directed to a circulating fluidized bed reactor. The circulating fluidized bed reactor comprises a reaction chamber and a rear cage. The reaction chamber is connected by an acceleration duct to a centrifugal separator for separating particles from hot gases coming from the reaction chamber. At least part of the acceleration duct is inside the top of the reaction chamber, and the centrifugal separator has substantially vertical walls in transversal section. In addition, the circulating fluidized bed reactor is further characterized by at least one of the following: the centrifugal separator and the rear cage have a common wall, the reaction chamber and the rear cage have a common wall, and the reaction chamber, the centrifugal separator and the rear cage collectively constitute a basic module.

Reconsideration is respectfully requested of the rejection of presently pending Claim 27 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicant regards as the invention, in that in presently pending Claim 27 the Applicant discloses that gases are evacuated from the centrifugal separator via a vertical duct situated inside the centrifugal separator and directs the gases toward the bottom of the centrifugal separator, but as shown in Figures 5-8 of the drawings of the above-identified application, the gases are directed upwardly out of the centrifugal separator; and of

the rejection of presently pending Claims 6-15, 22 and 30-35 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicant regards as the invention, in that Claims 6-14 and 32-35 recite the limitation "the rear cage" in line 2 but there is insufficient antecedent basis for this limitation in these claims, and in that Claims 15, 22 and 30 recite the limitation "the deflector" in line 2 but there is insufficient antecedent basis for this limitation in these claims, and in that Claim 31 recites the limitation "one of the evacuation ducts" in line 2 but there is insufficient antecedent basis for this limitation in this claim; insofar as any one of or all of these rejections may be deemed to be applicable to new Claims 36 to 58, inclusive, the only claims remaining under consideration in the above-identified application.

Applicant respectfully submits that to the extent that any reference is made thereto, in new Claims 36 to 58, inclusive, the gases are correctly stated to be "directed outwardly out of the separator", and in new Claims 36 to 58, inclusive, an antecedent basis exists for the recitation of "the rear cage" therein and for the recitation of "the deflector" therein. Further, Applicant would respectfully submit with regard to the phrase "one of the evacuation ducts", which appeared in presently pending Claim 31 and to which the Examiner has objected stating that there is insufficient antecedent basis for this limitation in this claim, this phrase does not appear anywhere in any of the new Claims 36 to 58, inclusive.

Reconsideration is respectfully requested of the rejection of presently pending Claims 1-3, 5, 16-19, 21, 26, 27 and 28 under 35 U.S.C. 102(b) as being anticipated by Dietz (US 5,771,844); and of the rejection of presently pending Claim 20 under 35 U.S.C. 103(a) as being unpatentable over Dietz (US 5,771,844) in view of Dietz (US 5,203,284); and of the rejection of presently pending Claim 4 under 35 U.S.C. 103(a) as being unpatentable over Dietz (US 5,771,844); insofar as any one or all of these rejections may be deemed to be applicable to new Claims 36 to 58, inclusive, the only claims remaining under consideration in the instant application.

With respect to the rejection of presently pending Claims 1-3, 5, 6, 16-19, 21, 26, 27 and 28 under 35 U.S.C. 102(b), the Examiner states that:

"Dietz discloses a circulating fluidized bed reactor (14) connected by an acceleration duct (12) to a centrifugal separator (10) for separating particles from hot gases coming from the reaction chamber, the acceleration duct is inside the top of the reaction chamber and the separator has straight vertical walls shown in traversal

section identified in Figures 4 & 5. The acceleration duct has an inlet which is perpendicular to the extrados of the duct (SEE Figure 3) and has a gradually changing cross section by way of the curved portion (13) (claim 26), Figure 3 also shows a common and aligned tube wall of the separator and the reaction chamber which also share the same wall with the acceleration duct (Figure 4). The tubes (31, 33 and 35) are welded together by metal fins and covered with a refractory material (SEE column 6, lines 22-27). Gases are evacuated from the centrifugal separator by way of vertical duct (18) situated in the middle of the separator."

With respect to the rejection of presently pending Claim 20 under 35 U.S.C. 103(a), the Examiner states that:

"Dietz '844 discloses the applicants primary inventive concept as stated above including an acceleration duct made of tubes, however the illustration of Figure 3 does not conclusively show tubes forming a separate circuit regarding element 13. Dietz '284 more clearly shows a separate tube circuit (54a) as a portion of the acceleration duct. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains to have modified the acceleration duct of Dietz '844 to consist of tubes forming a separate circuit as taught by Dietz '284 since the applicant has not disclosed that having a separate circuit solves any stated problem in a new or unexpected way or is for any particular purpose which is unobvious to one of ordinary skill."

With respect to the rejection of presently pending Claim 4 under 35 U.S.C. 103(a), the Examiner states that:

"Dietz discloses the applicants primary inventive concept as stated above including an acceleration duct having an inlet mouth substantially perpendicular to the extrados of the duct, however, Dietz does not specifically teach an alternate embodiment of the inlet mouth being parallel to the extrados of the duct. It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the acceleration duct with an inlet mouth substantially parallel to the extrados of the duct since such a modification is regarded as an obvious matter of design choice and within the level of ordinary skill in the art."

For the reasons now to be set forth, Applicant respectfully submits that the circulating fluidized bed reactor as presently defined in each of new Claims 36 to 58, inclusive, is neither taught nor even suggested by the teachings of Dietz (US 5,771,844) or by the teachings of Dietz (US 5,203,284), either when the teachings

thereof are considered individually or when they are taken collectively. To this end, Applicant would respectfully submit that all of new Claims 36 to 58, inclusive, to the extent that these new claims encompass subject matter that is recited in presently pending Claims 1 to 35, inclusive, are limited to subject matter that is recited only in those of presently pending Claims 1 to 35, inclusive, which were not rejected by the Examiner in the Office Action of January 10, 2007 in view of the teachings of the Dietz (US 5, 771,844) prior art reference and/or in view of the teachings of the Dietz (US 5,203,284) prior art reference. Moreover, Applicant would respectfully submit that neither of the Dietz references that have been relied on by the Examiner in the Office Action of January 10, 2007 contains, by way of exemplification and not limitation, either a teaching or even a suggestion of providing a circulating fluidized bed reactor, as defined in new independent Claim 36, or a circulating fluidized bed reactor as defined in new independent Claim 37, or a circulating fluidized bed reactor as defined in new independent Claim 38, or a circulating fluidized bed reactor as defined in new independent Claim 45. Further to this point, in new independent Claim 36 the circulating fluidized bed reactor is defined as "comprising a reaction chamber connected by an acceleration duct to a centrifugal separator for separating particles from hot gases coming from the reaction chamber, and a rear cage, wherein at least part of the acceleration duct is inside the top of the reaction chamber, the centrifugal separator has substantially vertical walls in transversal section, and the centrifugal separator and the rear cage have a common wall"; and in new independent Claim 37 the circulating fluidized bed reactor is defined as "comprising a reaction chamber connected by an acceleration duct to a centrifugal separator for separating particles from hot gases coming from the reaction chamber, and a rear cage, wherein at least part of the acceleration duct is inside the top of the reaction chamber, the centrifugal separator has substantially vertical walls in transversal section, and the reaction chamber and the rear cage have a common wall"; and in new independent Claim 38 the circulating fluidized bed reactor is defined as "comprising a reaction chamber connected by an acceleration duct to a centrifugal separator for separating particles from hot gases coming from the reaction chamber, and a rear cage, wherein at least part of the acceleration duct is inside the top of the reaction chamber, the centrifugal separator has substantially vertical walls in transversal section, and the reaction chamber, the centrifugal separator and the rear cage collectively constitute a basic module"; and in the new independent Claim 45 the circulating fluidized bed

reactor is defined as “comprising a reaction chamber connected by an acceleration duct having an interior deflector to a centrifugal separator for separating particles from hot gases coming from the reaction chamber, and a rear cage, wherein at least part of the acceleration duct is inside the top of the reaction chamber, the centrifugal separator has substantially vertical walls in transversal section, and the interior wall of the reaction chamber includes the inlet deflector of the acceleration duct”.

New Claims 39, 40, 41, 42, 43 and 44 each traces its dependency to new independent Claim 38 and, therefore, necessarily incorporates all of the limitations of new independent Claim 38, which Applicant respectfully submits for the reasons set forth hereinabove are neither taught nor suggested by the Dietz (US 5,771,844) reference or the Dietz (US 5,203,284) reference, either when considered individually or when taken collectively. In addition, new Claim 39 further defines the circulating fluidized bed reactor “wherein the reaction chamber and the centrifugal separator have aligned exterior walls”. New Claim 40 further defines the circulating fluidized bed reactor “wherein the power of the circulating fluidized bed reactor is a function of the number of basic modules used”. New Claim 41 further defines the circulating fluidized bed reactor “wherein two basic modules have a common wall”. New Claim 42 further defines the circulating fluidized bed reactor “wherein the wall common to two basic modules and between two centrifugal separators is a partial wall”. New Claim 43 further defines the circulating fluidized bed reactor “wherein the reaction chambers of two adjacent basic modules are combined”. New Claim 44 further defines the circulating fluidized bed reactor “wherein the rear cages of two adjacent basic modules are combined”.

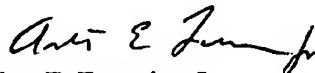
New Claims 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57 and 58 each traces its dependency to new independent Claim 45 and, therefore, necessarily incorporates all of the limitations of new independent Claim 45, which Applicant respectfully submits for the reasons set forth hereinabove are neither taught nor suggested by the Dietz (US 5,771,844) or the Dietz (US 5,203,284) reference, either when considered individually or when taken collectively. In addition, new Claim 46 further defines the circulating fluidized bed reactor “wherein the inlet deflector of the acceleration duct consists of tubes diverted from the walls of the reaction chamber”. New Claim 47 further defines the circulating fluidized bed reactor “wherein the inlet deflector of the acceleration duct is formed by rounding the tubes of the floor of the acceleration duct”. New Claim 48 further defines the circulating fluidized bed reactor “wherein the floor of the

acceleration duct is inclined toward the centrifugal separator". New Claim 49 further defines the circulating fluidized bed reactor "wherein the floor of the acceleration duct is inclined toward the extrados of the acceleration duct". New Claim 50 further defines the circulating fluidized bed reactor "wherein the gases are evacuated from the centrifugal separator via a vertical evacuation duct situated inside the centrifugal separator such that the gases are directed upwardly out of the centrifugal separator". New Claim 51 further defines the circulating fluidized bed reactor "wherein the vertical evacuation duct is placed in the middle of the centrifugal separator". New Claim 52 further defines the circulating fluidized bed reactor "wherein a deflector is placed at the top of the centrifugal separator". New Claim 53 further defines the circulating fluidized bed reactor "wherein the deflector has a section at least equal to that of the vertical evacuation duct, the position of the deflector is substantially aligned with that of the vertical evacuation duct, and the height of the deflector is less than that of the constant section portion of the centrifugal separator". New Claim 54 further defines the circulating fluidized bed reactor "wherein the centrifugal separator is carried by the vertical evacuation duct of the centrifugal separator". New Claim 55 further defines the circulating fluidized bed reactor "wherein the rear cage is horizontal". New Claim 56 further defines the circulating fluidized bed reactor "wherein the rear cage is situated under the centrifugal separator". New Claim 57 further defines the circulating fluidized bed reactor "wherein the rear cage is placed on concrete slabs". New Claim 58 further defines the circulating fluidized bed reactor "wherein a secondary separator is placed between the main centrifugal separator and the rear cage".

The prior art made of record and not relied upon by the Examiner in the Office Action of January 10, 2007 has been reviewed by Applicant. Based on Applicant's review thereof, Applicant respectfully submits that such prior art even if considered with the teachings of the Dietz (US 5,771,844) reference and/or the Dietz (US 5,203,284) reference fails to teach or even suggest Applicant's invention as said invention is presently defined in new Claims 36 to 58, inclusive, the only claims presently remaining under consideration in the instant application.

In view of the above amendments and remarks, it is respectfully submitted that new independent Claim 36, new independent Claim 37, new independent Claim 38 to which each of dependent Claims 39, 40, 41, 42, 43 and 44 traces its dependency, and new independent Claim 45 to which each of dependent Claims 46, 47, 48, 49 50, 51, 52, 53, 54, 55, 56, 57 and 58 traces its dependency, the only claims remaining under consideration in the instant application are clearly allowable over the references relied on by the Examiner in the Office Action of January 10, 2007 as well as over the references cited but not relied on by the Examiner in the Office Action of January 10, 2007, and that this case is clearly in condition for allowance, and such action is accordingly respectfully requested.

Respectfully submitted,



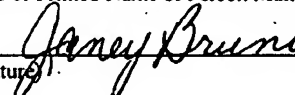
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